SANTEC VIDEO TECHNOLOGIES

USER MANUAL

SanStore digital video recorder

Models:
SanStore-4EM
SanStore-8EM

Version 1.1sfi/0511/engl/A5

Dear customer,

Thank you for purchasing a high quality SANTEC device.

We recommend that you read this manual thoroughly before operating your new system for the first time. Please follow all instructions and observe the warnings contained in this manual.

Please contact your local dealer or use the SANTEC Service Hotline if you have any questions or if you wish to claim for a service or warranty.

You will find further information on our website:
www.santec-video.com

SANTEC Service Hotline:
+49 / 900 / 1 72 68 32
+49 / 900 / 1 SANTEC
(if available from your country)

support@santec-video.com

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1. PREFACE

Please read this user manual carefully before starting to operate this device. Please retain this user manual for future reference.

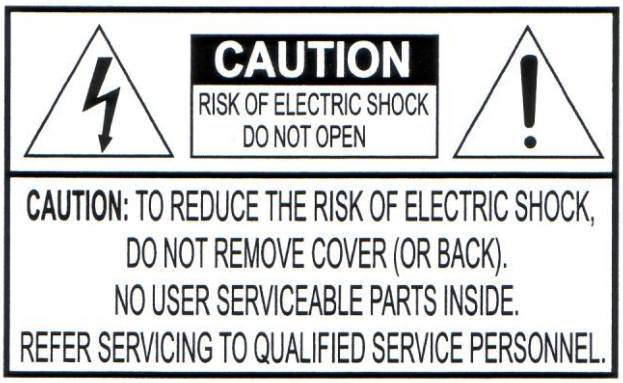
1.1 Description of symbols

Caution: Danger to life!
In the text, this sign symbolises life-threatening voltages which may lead to damages to humans and to material.

Attention: Important note!
In the text, this sign refers to operation and maintenance notes which have to be adhered to. Please ensure to follow theses notes.

General note!
In the text, this sign symbolises general notes and recommendations which might not necessarily be in direct connection with the device's operation.

1.2 Safety instructions and precautions


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

Caution: Overcharge
Never expose the power socket or the power cord to electrical overcharge. This may lead to fire and life-threatening shocks.

Caution: Thunderstorms
If there is a thunderstorm or if the device has not been in use for a longer period of time, please always disconnect the device from the power source. Disconnect the power cord. This protects the device from lightning damages or overcharging.

Caution: Entry of liquids or items
Never poke with metalic items in the ventilation slots of the device. You may touch dangerous live power items which may lead to an electronic shock, a short circuit or fire.

Note:
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if no installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution:
Risk of explosion if the lithium battery is not installed correctly or if it is replaced by an incorrect type. Only use batteries which are compatible to the device and are recommended by the manufacturer. Dispose of used batteries only in accordance with local regulations.

1.3 Important general note

Please read the following instructions carefully.

1.3.1 Assembly and installation

- On-site installation should only be performed by qualified maintenance personnel and must meet local specifications and regulations.
- Never operate the equipment without the respective protective cover near water, in dusty rooms or extremely humid rooms. The equipment could be seriously damaged.
- The openings on the equipment are intended for ventilation purposes and protect from overheating. Never cover or close off these openings. Rack mounting is only permissible if sufficient ventilation can be ensured. Overheating may damage the equipment or result in fire due to short-circuit.
- Power cables and other cables should be run so as to avoid being stepped on or potential damage from falling objects. Damaged cables may result in short-circuit and equipment damage as well as potentially fatal electrical shock.
- When connecting the supply voltage please note correct polarity. Faulty connections may damage or destroy the equipment.
- Only use the power source specified on the nameplate. Please consult your electrician if you are unsure whether the power supply on site is appropriate. Only use the supplied power cables or power adapters or the specified recommended power supplies.

1.3.2 Maintenance and repair

- Shut off and unplug the equipment from the power receptacle prior to every cleaning. Only clean the equipment with a slightly dampened cloth. Do not use harsh cleaners or spray cans. Using harsh solvents such as thinner or petrol may damage the housing surface.
- Immediately shut off the equipment and promptly disconnect it from the operating voltage. The following damages must be handled by an authorized service centre:
    - Damage to the power supply cable
    - If a liquid spilled onto the equipment or an object penetrated the equipment
    - If the equipment was exposed to water or another liquid
    - If the equipment is not functioning properly despite observing the instructions in these operating instructions. Only the controls specified in these operating instructions may be adjusted. Incorrect settings to the other controls may damage the equipment.
    - If the equipment fell to the floor or the housing was damaged
    - If the equipment performance is substantially the required performance
- Never attempt to maintain the equipment yourself, as this may expose you to hazardous voltages. Maintenance work should always be performed by qualified personnel only.

Attention:
Opening the appliance will result in loss of warranty. Do not try to repair the appliance yourself but contact your local distributor or specialist.

- For digital recorders, it is mainly the HDD which subject to natural attrition. HDD attrition may happen after approx. 8,000 to 10,000 hours of operating time which may lead to malfunctions. We thus recommend to replace the HDD in specific intervals in order to ensure a smooth operation of the appliance. Moreover, we recommend to clean the built-in fan regularly from dust and dirt to avoid interferences caused by overheating. Please do not hesitate to contact us in case of further questions.

Attention: Attrition of mechanical parts
We explicitely point out that any type of recording device, no matter if it is an analogue or digital device, is subject to natural attrition. Every recording device contains mechanical parts which – like any other device – need to be maintained and checked regularly. This is particularly important for appliances which run non-stop.

1.3.3 Spare parts and accessories

- Only use auxiliary devices which are recommended by the manufacturer. Non-recommended devices may influence the functionality and may cause electric shocks or fire caused by short circuits.
- Only use spare parts which are recommended by the manufacturer or which have identical characteristics. Non-approved spare parts may cause harm to people (electric shock) and may damage the device (fire).

1.4 Items included in the delivery

1x video recorder SanStore-4EM or SanStore-8EM
1x remote control
2x battery
1x power cord
1x AC adapter
1x software CD
1x user manual
4x screws

1.5 General note

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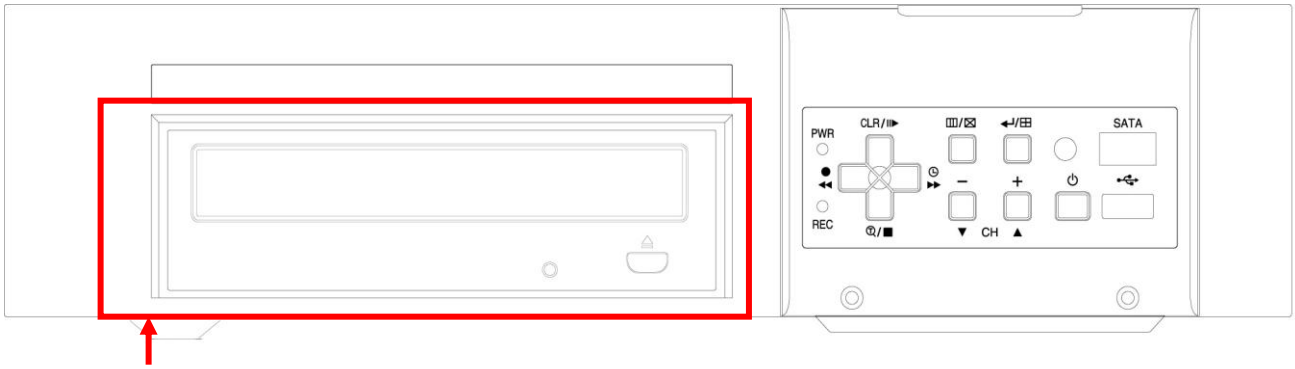
2. CONTROLS

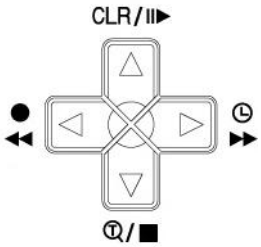
2.1. Front panel



Built in CD RW or DVD RW

1. **Mode Indicator :** 2 LEDs display the status of the Digital Video Recorder. Power (Green) and Recording (RED)

2. **Playback /Record control:** These functions are defined by if it's in Live Mode or Playback mode.



1) [Direction▲▼◀▶]: In Menu setup mode, used to move the cursor.

2) CLR/II▶ [Clear/Still or Playback]:

① Clear: This button is used to hide the On-Screen-Display information such as time, date and channel icons. This button also removes any of the alert icons on the corner of the screen (AL, VL and PL). This button is also used to turn off the alarm buzzer.

② Still or Playback: This button is used to still or 1 x playback during playback mode.

3) ▶▶ [Schedule/F step or FF] :

① Schedule : Press this button to make scheduled recording standby. You can toggle to start Schedule record or to stop.

② Forward step: This button is used to move forward field by field (picture by picture) during STILL mode

③ F.F. : This button is used to Fast Forwarding during PLAYBACK mode.

4) ■ [Time Search/ Playback Stop]

① Time Search : This button accesses the time search menu. Use the directional buttons to select the date and the time. Press [Enter] button to start the playback of the selection.

② Stop: This button stops playback

5) ● ◀◀ [REC/ R step or FR]

① REC: Press this button to start recording. You can toggle to start record or stop.

② Reverse Step: This button is used to move reverse field by field during STILL mode.

③ Fast Rewind: This button is used to fast rewind during PLAYBACK mode.

3. **Menu Button:**

1) ▥/⊠ Menu/ Cancel

① Menu: Press this button to display the MAIN MENU screen.

② Cancel: Press this button to exit menu without saving.

2) ↵/⊞ Enter/Display

① ENTER: Press this button to save menu settings

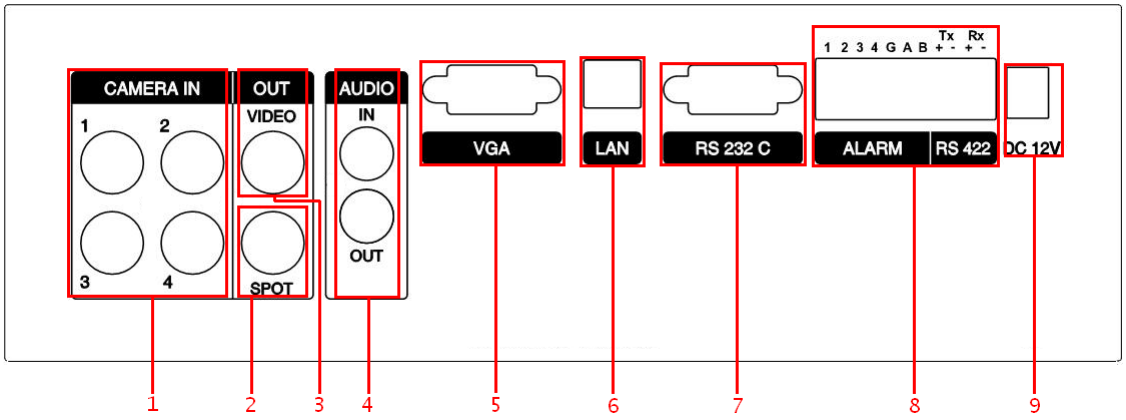
② Display : Press this button to display the cameras in multi-screen mode

4. **Channel / Numeric Buttons:**
These buttons have a number of functions to enter data and to make selections. They are used to enter numerical data when prompted for the password, to make channel/camera selection, to choose the day in schedule option.
- [-, +] : To Decrease settings , To Increase settings

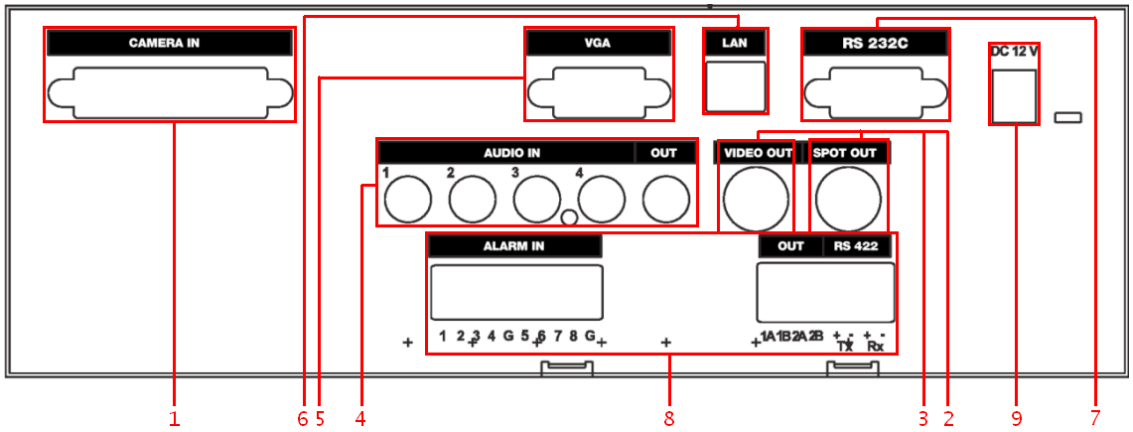
5. **Remote control signal receiver:**
Do not block the receiver as the remote controller needs the line of sight to the receiver.
6. **POWER button :** ⏻
Press this button to turn the power on; press again to turn the power off. . The POWER LED lights/goes off when the power is on/off.
7. **SATA (Option)** : Used for extended Recording .(Not available at the moment!)
8. **USB connection** ⇐ : USB compliant port allows use of memory sticks to backup video files.

2.2. Rear panel connectors

SanStore-4EM:



SanStore-8EM:



1) Camera Inputs: BNC input connectors

2) Spot out connector

3) Composite Monitor Output: BNC standard composite video output connector.

4) AUDIO Input /Output connectors: RCA

5) VGA out connector

6) RJ-45 Ethernet Port(Lan): For connecting to remote PC via Ethernet network.

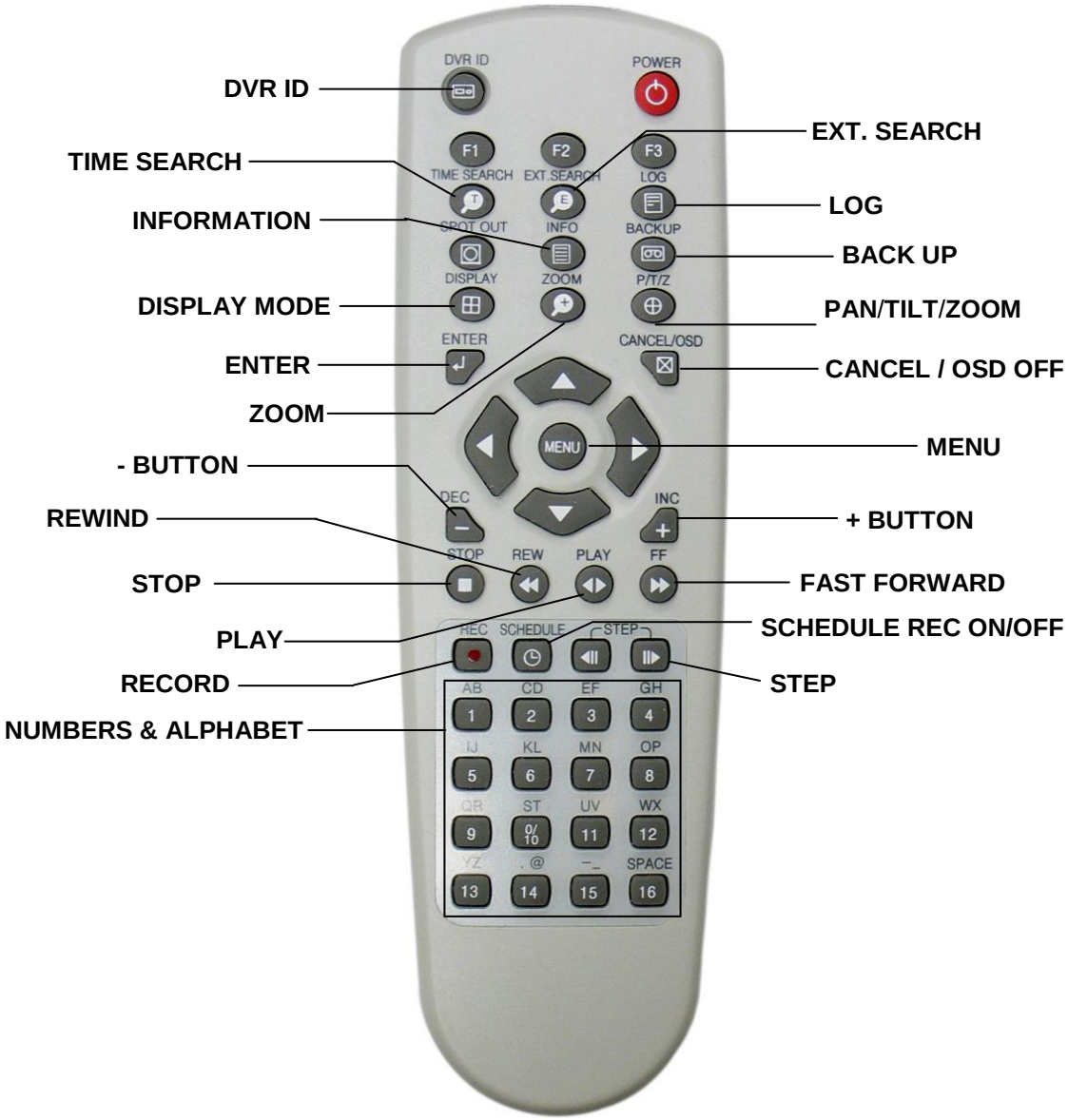
7) RS-232C [D-SUB 9PIN] : Development purposes only.

8) ALARM IN/OUT: For connecting alarm inputs) and alarm out relays.

9) RS-422 : For connecting to PTZ camera.

10) DC power Adaptor Socket

2.3. Remote control



Note:
"Ext. search" is not supported by this model.

2.4. Virtual keyboard for mouse control

This DVR provides a virtual on-screen keyboard to perform the control by mouse. Connect a mouse via USB port before use. If you click right button of your mouse in live mode and playback mode, you will see following virtual controller. This virtual keyboard operates similarly, but display different fields depending on the task being performed.

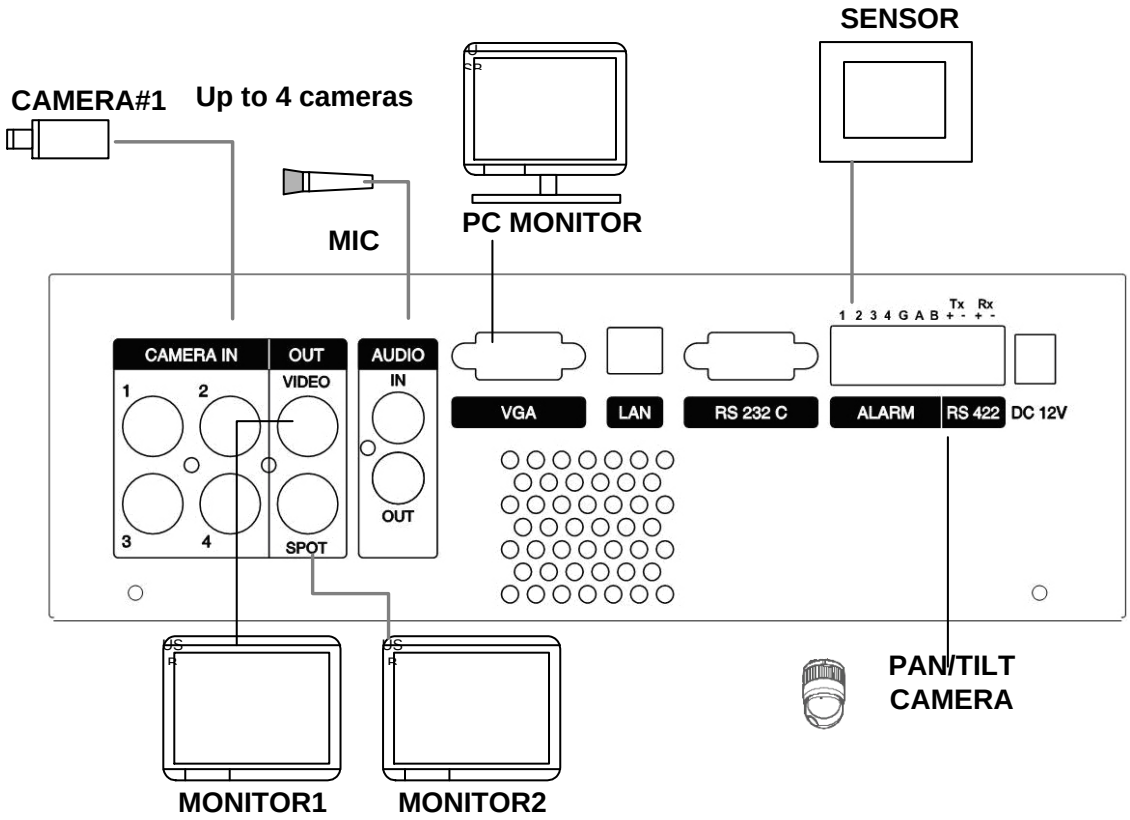
Live

Playback

Virtual keyboard

3. INSTALLATION AND CONNECTIONS

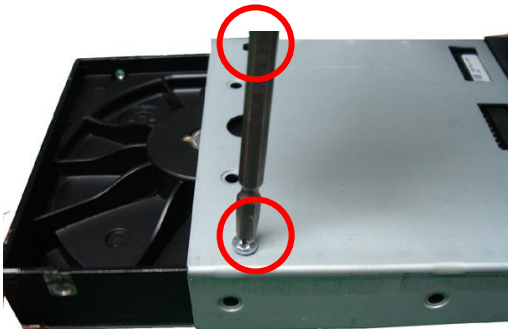
3.1 Camera, monitor, microphone, alarm sensor and power cord



RS-422 connection:
TX + - : Connect to PTZ camera

3.2 HDD connection

Please ensure that the HDD is firmly connected with the HDD rack bay.



1. Secure the hard drive by fastening the screws included with the package.
2. Secure the rack by fastening the screws included with the package.

Note:
Do not replace the HDD while the unit is recording.

3.3 PC system requirements for network connection

Intel DualCore 2,2 GHz
2 GB RAM
256 MB memory, DirectX 9 compatible
Monitor: XGA resolution (1024 x 768)
100 Mbit/sec network card
50 MB HDD for installation
Windows Vista Home Basic 32 bit; Windows XP Home SP2
DirectX 9.0

Microsoft DirectX 9.0c:	It is recommended to have installed DirectX 9.0c. It can be downloaded from the Microsoft homepage: www.microsoft.com/windows/directx

Note:

- Avoid bridging the network card on this computer.
- The connection and remote viewing of the DVR may not be successful on all PCs due to the variety of PCs' Internet connection settings.
  Please contact the technical support for further assistance.

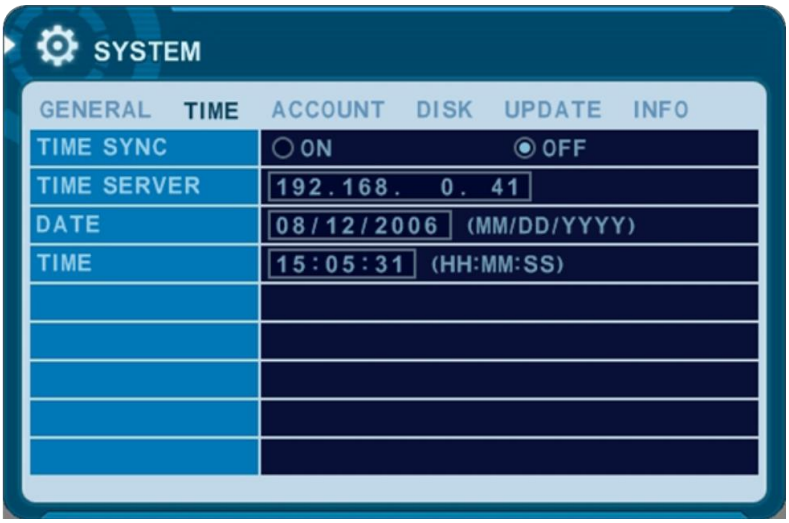
4. QUICK START

To turn on the DVR, press the [POWER] button on the front panel or on the remote control. When the recorder is powered on, the live viewing screen will appear in about 30 seconds.

- Before starting the quick setup, make sure to stop all recordings. While the DVR is recording, the time and recording menu are not active.
- When prompted for a password, enter it using the numeric buttons.

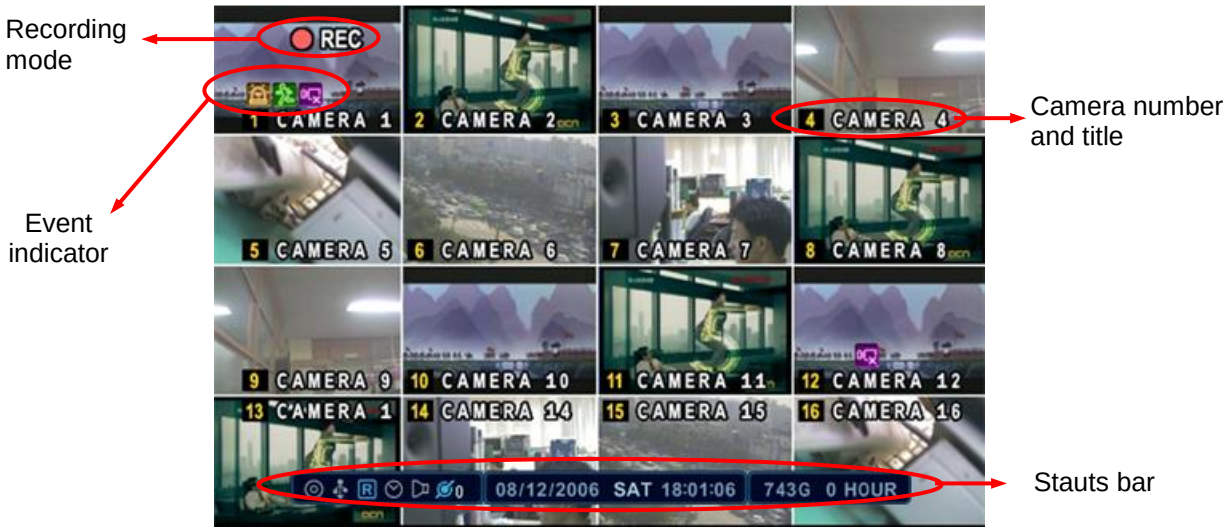
The factory default password is “000000”.

Time and date setting:
When the DVR is powered on for the very first time, the time and date are set as default to January 1, 2006 Sunday 01:00:00. Before any other operation of the Digital Video Recorder, it is important to setup the time and the date.



5.LIVE VIEWING

5.1. Display overview



Event indicator (1) (2) (3)

(1) Alarm: The alarm has been triggered. Press the [CANCEL / ESC] button on the recorder or the [CLR] button on the remote control to hide the alarm indicator.
(2) Motion detection: A motion has been detected. Press the [CANCEL / ESC] button on the recorder or the [CLR] button on the remote control to hide the motion detection indicator.
(3) Video loss: Video loss during recording. Press the [CANCEL / ESC] button on the recorder or the [CLR] button on the remote control to hide the video loss indicator.

Status bar 1 2 3 4 5 6

(1) Indicates that the built-in Cd/RW is connected. It changes to blue while in backup mode.
(2) Indicates that a USB device is connected on front panel. It changes to blue while it's doing backup.
(3) Indicates that a recording is in process.
(4) Indicates that a schedule is active. During recording it turns blue.
(5) Indicates that audio data is stored. During playback it turns blue.
(6) Indicates the number of users in the network (max. 3).

Status bar

Displays the date, day of the week and time.

Status bar

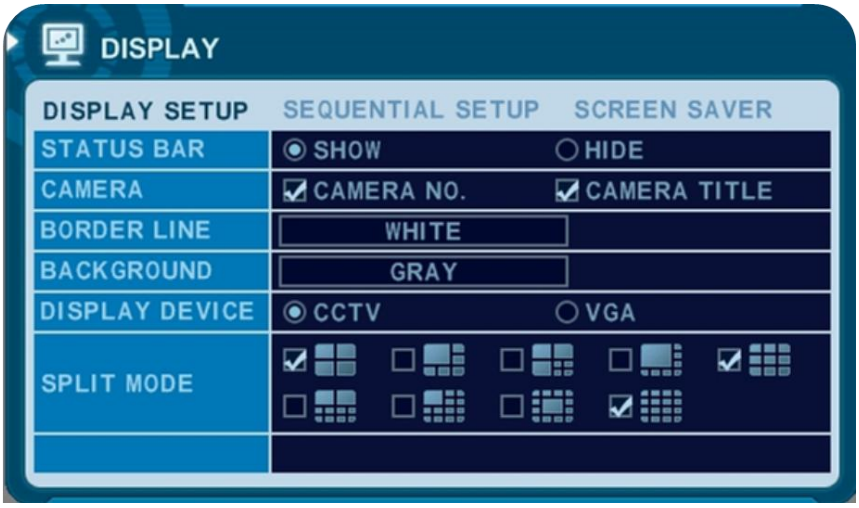
Displays the remaining recording time of the DVR. If the remaining HDD capacity is less than 4 GB, this blue "recycling" icon will light up.

5.2. Multi-screen display and sequencing

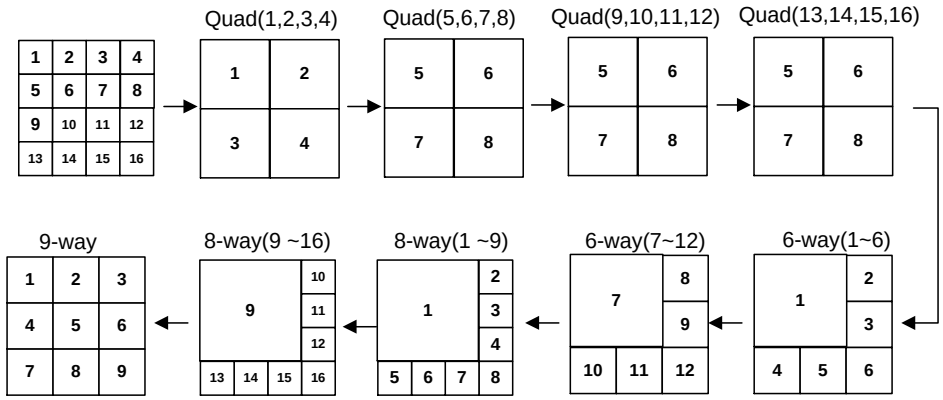
5.2.1. Screen display

Select any camera for full screen display by pressing the number button of the desired camera.

5.2.2. Multi-screen display and switch sequencing display

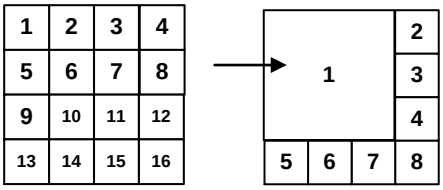


Press the [DISPLAY] button to activate the multiscreen display. It changes the order as defined in the SPLIT MODE.
If you are in 16-screen-display, press the [DISPLAY] button for 1 second to begin full screen sequencing.
The sequence mode and dwell times are programmable. If the sequence mode is not activated, it moves to quad mode instead of sequencing.



5.3. Quick buttons for multi-screen display

1) Press the **F1 button** on the remote controller + <Number> . For example, press the F1 button, then number 8.

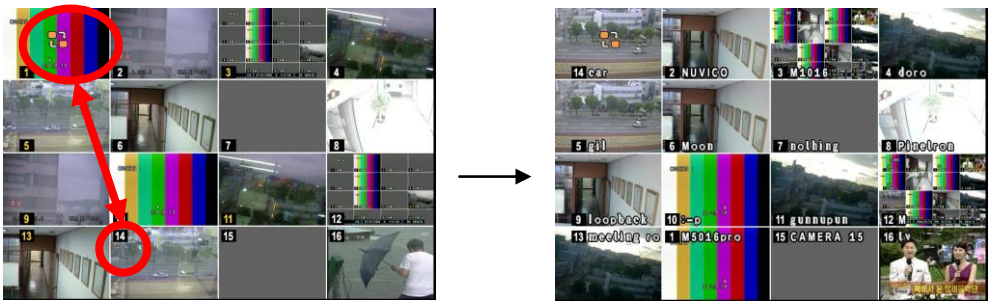


The eight channel view mode will be displayed.
Note: 4, 6, 8, 10, 13 split mode must be checked on <Spit mode> to use this function.

2) Repositioning
It is possible to reposition the camera from the bigger window with the one from a smaller one. It is used on 6, 7, 8, 9, 10, 13, 16 split mode

a. Press the **F2 button** on the remote controller. Mark will be displayed.

b. Press the numeric button you wish to switching display.



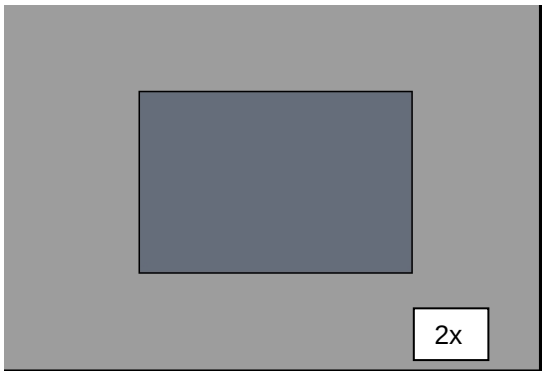
c. Press **[Enter]** button to exit here with saving changes.
Press **[Cancel]** to exit without change.
Press [Menu] button to rearrange.

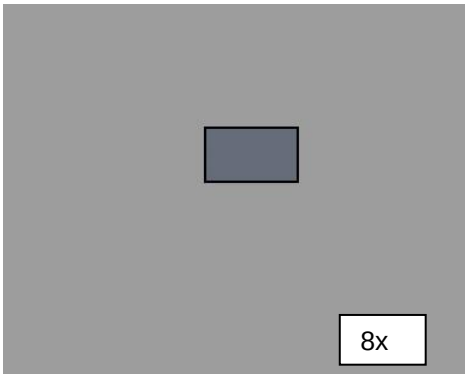
5.4. Zooming

During live view mode, it is possible to zoom into a section of the screen to get a close-up view of the screen.

Procedure:

- To activate the digital zoom, select the full screen display of the camera you wish to zoom.
- Then press the [ZOOM] button on remote control. A zoom area box pops up:





- Move the box to the desired position using the direction buttons. ▲▼◀▶
- Press the [+] button to increase the zoom area. Press the [-] button to decrease the zoom area.
- Press the [ENTER] button to zoom the area.
- Press the [CANCEL] button to return normal mode.

5.5. Spot monitor

In addition to the main monitor, attaching a spot monitor enables the user to monitor specific channels independently from the main monitor.

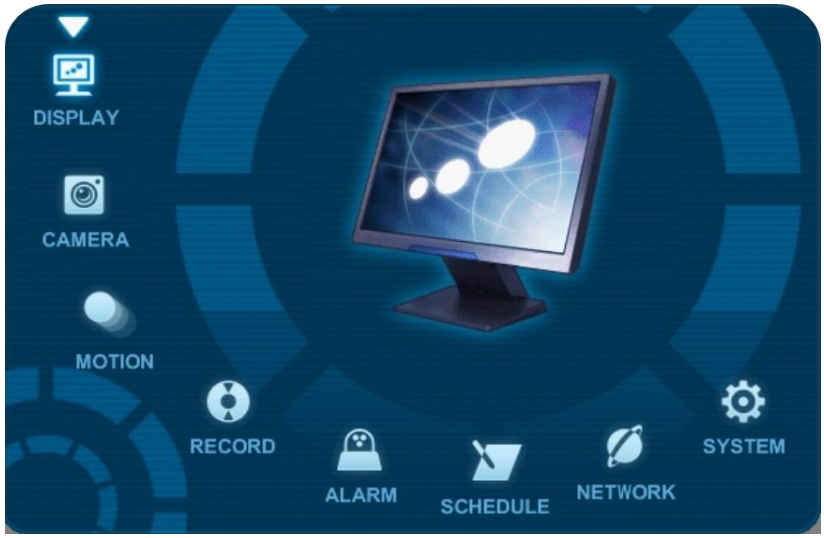
Procedure:

- Press the [SPOT] button on the remote control and then the numeric button of the camera you wish to see in full screen.
- Press the [SPOT] button twice to toggle between cameras. The interval between camers is described in chapter 6.2.2,
- If an alarm is triggered, the respective channel is displayed in full screen.

6. OPERATION

6.1 Main menu overview

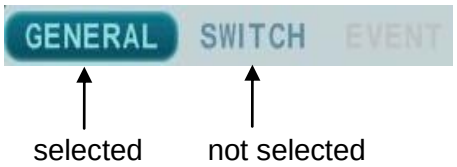
After switching on the recorder, the live picture appears on the screen after approx. 30 seconds. Press the [MENU] button to access the main menu. A window pops up and you are prompted for the “admin” password. Enter it by using the numeric buttons on the remote control or by using the keys on the recorder front panel (default factory password: 000000). Once the correct password is entered, the main menu appears.



Note:
The factory default password is “000000”. It is recommended to change the password upon installation.

Procedure:

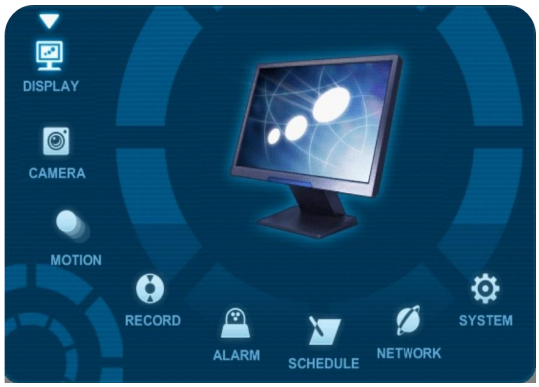
- Use the direction buttons [▲▼◀▶] to select the desired menu. Items selected in the menu are highlighted with an arrow.
- Press [ENTER] to confirm your selection and to access the sub-menu. Use the left/right buttons [◀▶] to select a tab menu. Selected items change to bold.

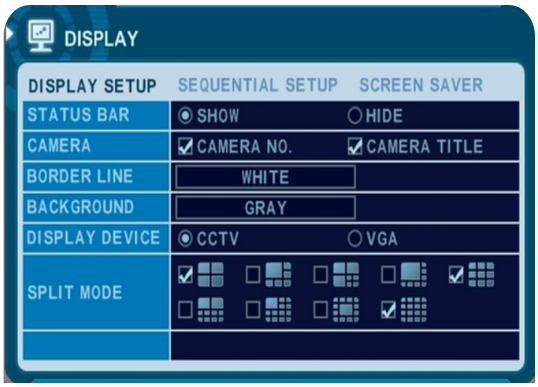


- Press the [MENU] button to exit a menu with saving changes.
  Press the [CANCEL] button to exit a menu without saving the changes.

6.2 Display options

6.2.1 Display setup





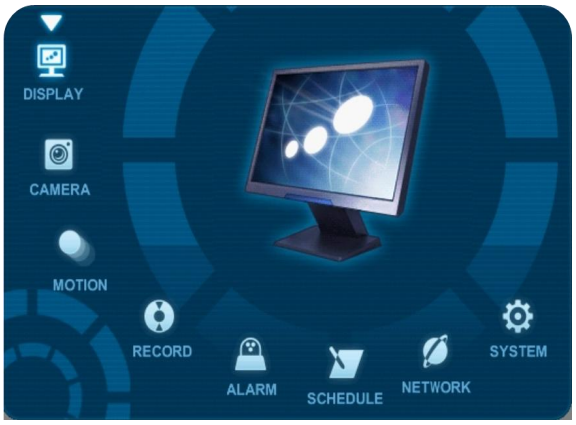
Procedure:

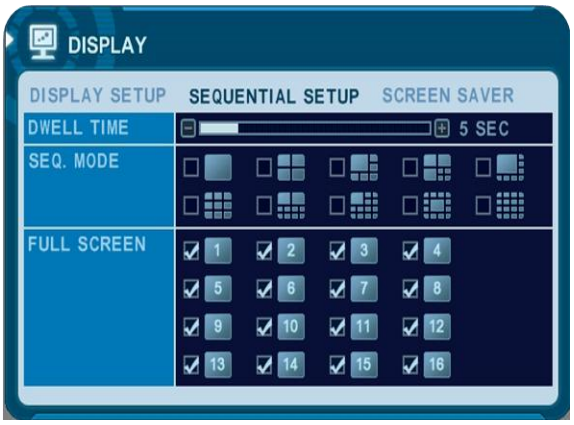
- Use the direction buttons [▲▼◀▶] to access the “display” menu. Then press [ENTER] to display the “configuration”.
- Use the left/right buttons [◀▶] to go to the next tab. The selected item is displayed in bold. DISPLAY SETUP SEQUENTIAL SETUP SCREEN SAVER
- Use the down button [▼] to select the item.
- Use the [- +] button to change the values.

ITEM	ADJUSTMENT
STATUS BAR	Select “show” or “hide” to define whether the below status bar should be displayed on the main monitor or not.
CAMERA	Select on-screen-display information for the camera number and title.
BORDER LINE	Select the colour of the board lines between the different cameras: White, grey, dark grey, black.
BACKGROUND	Select the background colour in case of NO VIDEO status, i.e. when no video is running. Grey, dark grey, black, blue, white
DISPLAY DEVICE	Select On-Screen-Display coordinates on the monitor. - CCTV: Displays properly at CCTV Monitors - VGA : Displays properly at VGA Monitors.

- To save the changes and exit the menu, press the [MENU] button.
  To exit the menu without saving the changes, press the [CANCEL] button.

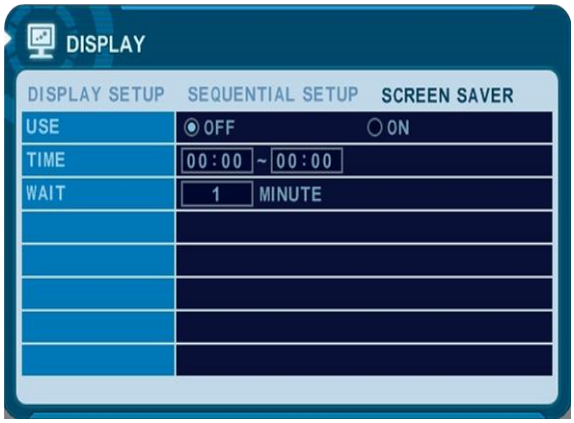
6.2.2 Sequential setup (auto sequence)





Item	Default	Description
DWELL TIME	5 sec.	Select the dwell time for each camera or how long the multi-screen mode should be displayed. Use the [- +] buttons (1-30 sec.)
SEQ. MODE	None	Select the sequence mode.
FULL SCREEN	All	Select the cameras to be included in or excluded from the sequence.

6.2.3 Screen saver

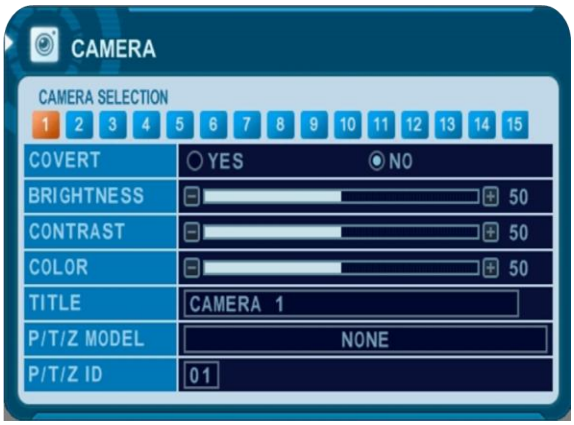


ITEM	DEFAULT	ADJUSTMENT
USE	OFF	if you want to use Screen Saver function, set it to “ON”.
TIME	00:00~00:00	Set the beginning time and ending time for the screen saver function for today.
WAIT	5 min	After the assigned tim, the monitor will turned into screen saving mode if there is no operation or touch in front buttons.

6.3 Camera setup

Procedure:

- Use the direction buttons [▲▼◀▶] to select „camera“. Then press [ENTER] to confirm.
- Use the left/right buttons [◀▶] or the numeric buttons to select the camera you wish to configure.
- Use the down button [▼] to select an item.
- Use the [- +] buttons to change the values.



ITEM	DEFAULT	ADJUSTMENT
COVERT	No	If the covert mode is set to “YES”, the selected camera is invisible from all live displays, playback and network while continuing to record. Covert cameras are viewable after changing the setting to “NO” .
BRIGHTNESS	50%	The brightness of each camera can be adjusted by pressing the [-,+] buttons.
CONTRAST	50%	The contrast of each camera can be adjusted by pressing the [-,+] buttons.
COLOR	50%	The color of each camera can be adjusted by pressing the [-,+] buttons.
CAMERA TITLE	Camera number	A combination of 12 digits and alphabets can be entered to label each camera. Press the appropriate numeric button to type thecamera title. It’s up to 12 characters (also see chart on next page)..
P/T/Z MODEL	None	Select the P/TZ camera model to be controlled.
P/T/Z ID	Camera number	Select appropriated channel for the PTZ camera. “Camera ID” means “camera address”.

Press [ENTER] to save the changes and to exit the menu.
Press [CANCEL] to exit the menu without saving the changes.

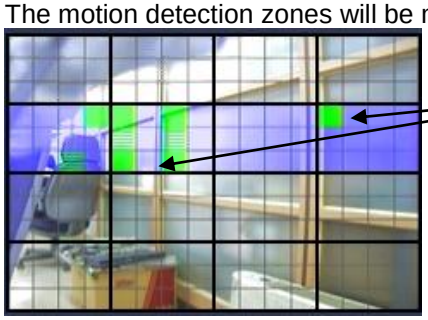
Enter letters via the numeric buttons of the remote control:

No.	1x press	2x press	3x press	No.	1x press	2x press	3x press
1	A	B	1	9	Q	R	9
2	C	D	2	10/0	S	T	10
3	E	F	3	11	U	V	11
4	G	H	4	12	W	X	
5	I	J	5	13	Y	Z	
6	K	L	6	14	.	@	
7	M	N	7	15	-	_	
8	O	P	8	16	Blank		

6.4 Motion recording

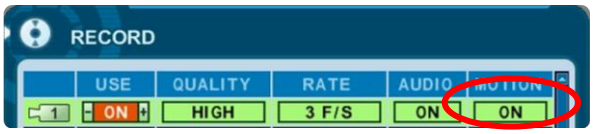
1. Use the direction buttons [▲▼◀▶] to select the “MOTION” menu. Then press the [ENTER] button to display “MOTION”.
2. Use the left/right buttons [◀▶] or the numeric buttons to select the camera you wish to configure.
3. Use the down [▼] button to move to the specified menu and use the left/right buttons [◀▶] to select another item.
4. Use the [-, +] buttons to change the value.

(continue on next page)

ITEM	ADJUSTMENT
RECORD TIME	Determines the duration of the recording when motion is detected. (10 sec – 300 sec)
CAMERA SECTION	Use the left/right buttons [◀▶] or the numeric buttons to select the camera you wish to configure.
MOTION LEVEL	Level 1 = Low sensitivity; level 20 = High sensitivity.
MOTION GRID	Use this menu to setup zones for the motion detection The screen shown below will overlay the current video image. It is divided into 16 grids and selected by the numeric buttons on the remote control. Select all. Clear all. The motion detection zones will be marked in green.  Motion detection zones Use the [+] button to select the motion grid. The running man icon will be activated. The [+] button is used for selecting and cancel. Use the [-] button to exit from the grid menu. It is also possible to select smaller motion grids for more precise motion detection by using the SanView software.

5. To save the changes and exit the menu, press the [ENTER] button. Then go to the “RECORD” menu.

6. Select “ON” or “OFF” to enable or disable the motion detection per camera, as shown below.



7. Press the [REC] button to start the motion recording according to the configured recording quality and the frame rate when a motion is detected. It will be back to stand-by mode after the motion recording time has ended.The camera does not record under normal conditions.

Notes:

- The motion recording will be extended if there is another motion detected during the motion recording.
- There may be cases when the motion detection function doesn’t operate properly due to the conditions of the video input signal or other factors.
- It is recommended to select at least 3 motion blocks to get a more accurate motion recording.

6.5 Continuous (normal) recording

The recorder has a number of default factory settings. Hence immediately after its installation the recorder is ready to record (press the [REC] button to start the recording). By default, audio alarm and motion detection are turned off.

Procedure:

- Use the direction buttons [▲▼◀▶] to select „recording“. Then press [ENTER] to confirm.
- Use the direction buttons [▲▼◀▶] to select the camera you wish to configure.
- Use the [- +] buttons to change the values.

RECORD
USE
QUALITY
RATE
AUDIO
MOTION
1 ON HIGH 3 F/S ON ON
2 ON HIGH 3 F/S ON ON
3 ON HIGH 3 F/S ON ON
4 ON HIGH 3 F/S ON ON
5 ON HIGH 3 F/S ON
6 ON HIGH 3 F/S ON
7 ON HIGH 3 F/S ON
8 ON HIGH 3 F/S ON

ITEM	ADJUSTMENT
USE	Enable or disable the recording per camera.
QUALITY	Specify the picture quality for each camera. ULTRA → SUPER → HIGH → MIDDLE →LOW
RATE	Select the recording speed for each camera. Recording resolutions is set under system setting → General
AUDIO	Set the audio recording to ON or OFF. The audio data is always recorded in real time unlike the video data that can be recorded in various modes including real time. There may be a slight delay in synchronisation of the audio to the video data.
MOTION	Set the motion recording to ON or OFF. The camera does not record under normal conditions. (cf. chapter 6.4)

Note:
Press the [DISPLAY] button at the beginning of each item to copy all settings to the other channels.

- Press [ENTER] to save the changes and to exit the menu.
- Press [REC]. A red indicator lights up at the front panel of the recorder and the recording starts.
- To stop the recording, press [STOP] on the remote control or press [REC] again at the recorder front panel.

Note:
The estimated recording time varies due to picture quality and capture rate and is updated every 10 seconds due to variation of picture size.

Approximate file size:

Quality	PAL			Unit
	720*576	720*288	360*288	
LOW	8	4.8	3	KB
MIDDLE	10.8	6.6	4.2	KB
HIGH	15.6	9.6	6	KB
SUPER	22.8	14.4	9	KB
ULTRA	37	22.8	14.4	KB

Note:
The above data is a theoretical calculation. Depending on the video signal or other conditions, the data may differ from reality.

6.6 Alarm recording

Please verify the alarm record settings prior to starting the alarm recording. Please note that the alarm recording is independent of any recording modes. Alarm record starts after the alarm recordind has been enabled.

6.6.1. Recording setup

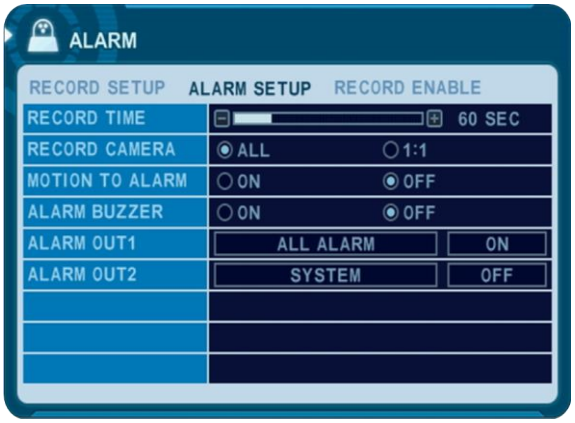
1. Use the direction buttons [▲▼◀▶] to select the “ALARM” menu. Then press the [ENTER] button to display “Alarm Record Setup”.
2. Use the left/right buttons [◀▶] to select a tab menu (RECORD SETUP ALARM SETUP).
3. Use the direction buttons [▲▼◀▶] to select the camera you wish to configure.
4. Use the [-, +] button to change the value.

ITEM	ADJUSTMENT
USE	Enable or disable the recording per camera.
QUALITY	Specify the picture quality for each camera. ULTRA → SUPER → HIGH → MIDDLE → LOW
RATE	Select recording rate of each camera when an alarm is triggered.
AUDIO	Set the audio recording to ON or OFF.
MOTION	Specify the type of alarm input device.

Note:
Press the [MENU] button at the beginning of each item to copy all settings to the other channels.

5. Press [ENTER] to save the changes and to exit the menu.
   Press [CANCEL] to exit the menu without saving the changes.

6.6.2 Alarm setup



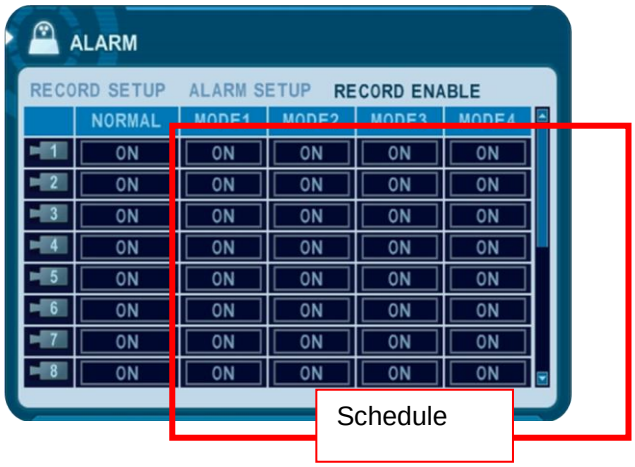
ITEM	ADJUSTMENT
RECORD TIME	Determines the duration of the recording after the alarm signal has been activated. [10 sec. - 300 sec]
RECORD CAMERA	„ALL": Start to record all alarm "ON" channels if there is any alarm signal triggered. „1:1": Start to record the channel on which the alarm is triggered.
MOTION TO ALARM	Select "ON" to use the motion detection if analarm is triggered - In the log, it will be listed as motion. - An e-mail is not sent.
ALARM BUZZER	ON: The buzzer sounds if an alarm is triggered. The buzzer will sound for the duration of the recording time.. OFF**:** Disables the alarm buzzer function. Note: Press the [-] button to stop the buzzer immediately. Stopping the buzzer doesn't stop the alarm recording.
ALARM OUT 1 / 2	Configure which relay will be triggered when an alarm is activated per camera. Select from four available options: "Alarm in 1", "Alarm in 2", Alarm in 3", "Alarm in 4" and "System". Note: If "System" is selected, the relay will be triggered when the system experiences problems such as HDD fail, power loss, etc. Press the [CANCEL] button to stop the alarm. The order of turning off is: Alarm > Motion > Video Loss

Press [ENTER] to save the changes and to exit the menu.

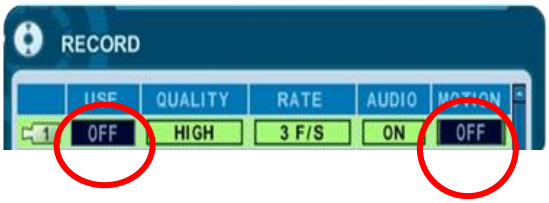
Press [REC] after selecting "Record enable", The red indicator at the recorder front panel lights up and the recording starts.

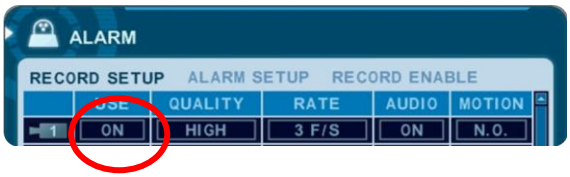
6.6.3 Alarm recording

Select the alarm recording. Mode 1-4 means schedule recording mode 1-4.



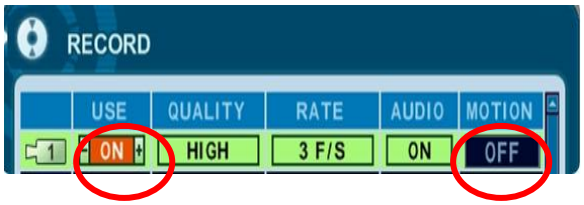
Example 1:





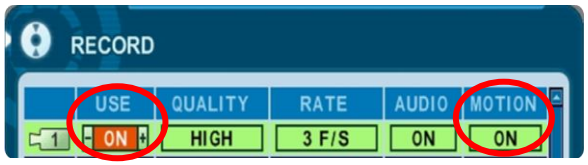
RECORD		Alarm		Resulting Actions
Normal	Motion	USE	Normal	
OFF	OFF	ON	ON	Press the [REC] button to start the alarm recording according to the set configurations (recording quality = super, frame rate = 15 fps, audio = on) if an alarm is triggered. It will be back to stand-by mode after the alarm recording duration time has ended. The camera does not record under normal conditions.

Example 2:



RECORD		Alarm		Resulting Actions
Normal	**Motion**	**USE**	**Normal**	
ON	OFF	ON	ON	Press the [REC button] to start the normal recording with high picture qualita at 3 fps without audio. When an alarm is triggered on this channel, it changes to record with super picture quality at 15fps with audio. It will be back to normal recording after the alarm recording duration time has ended.

Example 3:



RECORD		Alarm		Resulting Actions
Normal	**Motion**	**USE**	**Normal**	
ON	ON	ON	ON	Press the [REC] button to start the motions recording with high picture quality at 3fps without audio. When an alarm is triggered on this channel, it changes to record with super picture quality at 15fps with audio. It will be back to stand-by for alarm or motion after the alarm recording duration time has ended. The camera does not record under normal conditions.

6.7 Schedule

The schedule chart below shows a graphical representation of the recording mode for modes 1-4.

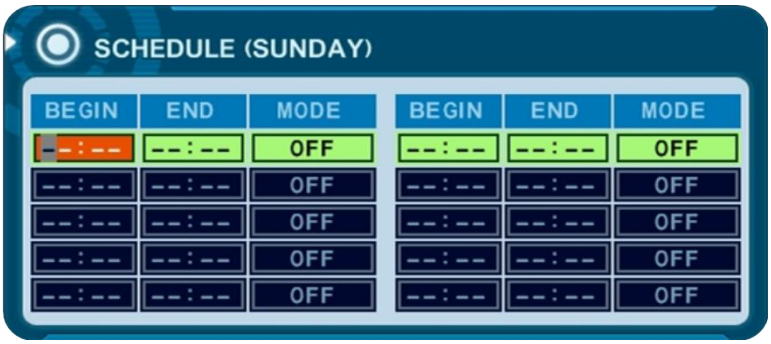
Procedure:

- Use the direction buttons [▲▼◀▶] to select „schedule“. Press the [ENTER] button to confirm.
- Use the left/right buttons [◀▶] to go to the next tab.

- Use the down button [▼] to select the day you wish to configure.

The days of the week are displayed as followis: All, Sun, Mon, Tue, Wed, Thu, Fri, Sat. A daily schedule has priority over “all”.

- Press [ENTER] to configure the selected day. The following window pops up:



- Enter the beginning and end time. Then select the recording mode to start recording.

- Set the recording dates:
  - Begin: Start time of recording
  - End: End time of recording. The end time must not be prior to or identical to the start time.
  - Mode: Up to 4 different recording modes can be pre-set (mode 1-4).

- Set the recording mode:

SCHEDULE
CHART MODE1 MODE2 MODE3 MODE4
USE QUALITY RATE AUDIO MOTION
1 ON HIGH 3 F/S OFF OFF
2 ON HIGH 3 F/S OFF OFF
3 ON HIGH 3 F/S OFF OFF
4 ON HIGH 3 F/S OFF OFF
5 ON HIGH 3 F/S OFF
6 ON HIGH 3 F/S OFF
7 ON HIGH 3 F/S OFF
8 ON HIGH 3 F/S OFF

Note:
Also see chapter “Continuous (normal) recording”.

Note:
The recording time is set by using a 24-hour clock (0:00 to 23:59). If the recording is to run longer than midnight, you have to set 2 days.
Example:

DAY	BEGIN	END	MODE
MON	18:00	23:59	MODE 1
TUE	00:00	08:59	MODE 1

The recording doesn’t work if the end time is before or identical to the start time:

DAY	BEGIN	END	MODE
MON	18:00	08:59	MODE 1

- Having made your settings, activate the schedule by pressing the [SCHEDULE] button. The schedule indicator lights up. If the scheduled recording time is identical to the current time, the recording will start immediately and the recording indicator lights up. If no recordings are scheduled, no recording will be done.
- Once the scheduled recording is over, the recording indicator is off and the recording ends.
- If you want to cancel a running recording, press the [SCHEDULE] button. The schedule indicator is off and the recording ends.

Summary of recording combinations:

RECORD MODE	MENU	RECORD		ALARM			SCHEDULE
		CAMERA	MOTION	USE	Normal	Mode 1-4	MODE 1-4 CAMERA
Continuous	RECORD	ON	OFF	OFF	OFF	OFF	OFF
Motion	RECORD	ON	ON	OFF	OFF	OFF	OFF
Alarm	ALARM	OFF	OFF	ON	ON	OFF	OFF
Schedule	SCHEDULE	OFF	OFF	OFF	OFF	OFF	ON
Schedule Motion	SCHEDULE	OFF	ON	OFF	OFF	OFF	ON
Normal and Alarm	RECORD & ALARM	ON	OFF	ON	ON	OFF	OFF
Motion and Alarm	RECORD & ALARM	ON	ON	ON	ON	OFF	OFF
Schedule and Alarm	ALARM &SCHEDULE	OFF	OFF	ON	OFF	ON	ON

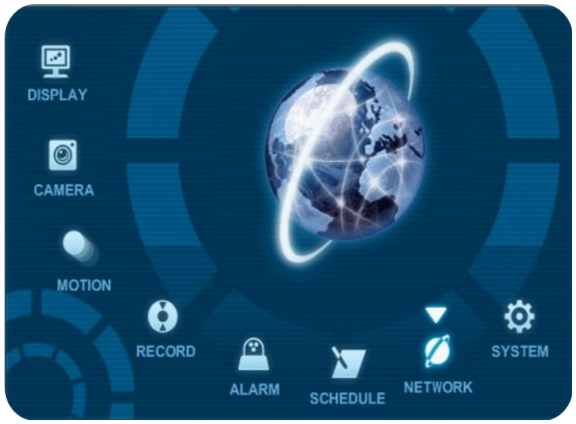
6.8 Network

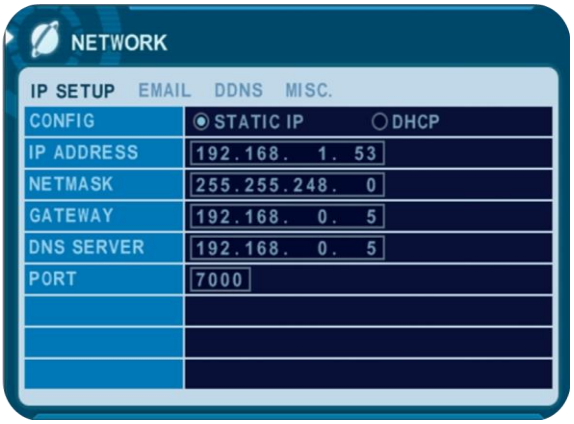
The IP address can be set as static or as dynamic.
The static service consists of an IP address that remains constant for the duration of the contract of the internet service. The dynamic service consists of an IP address that frequently changes every time a new connection is made through the provided modem, or recurrently in a given period of time. Though most internet service providers offer both solutions, this manual will distinguish the two solutions according to the commonly available service type to configure the DVR for the networking purposes.

6.8.1 IP settings

Procedure:

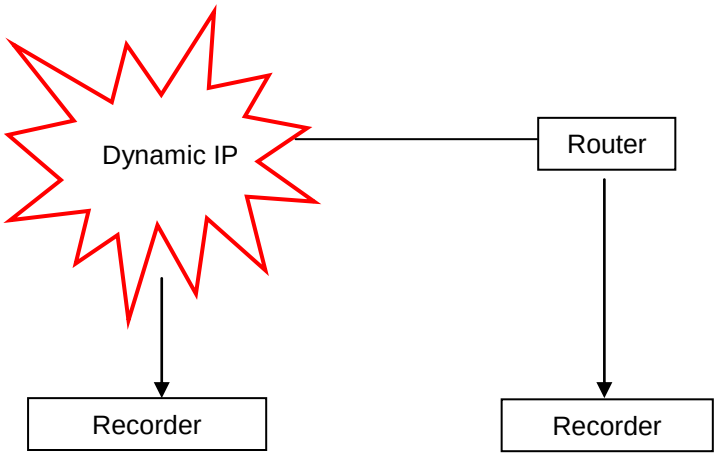
- Use the direction buttons [▲▼◀▶] to select „network“. Press [ENTER] to confirm.
- Use the down button [▼] to select an item.
- Use the [- +] buttons to change the values.
- Press [ENTER] to save the changes and to exit the menu.
  Press [CANCE] to exit the menu without saving the changes.





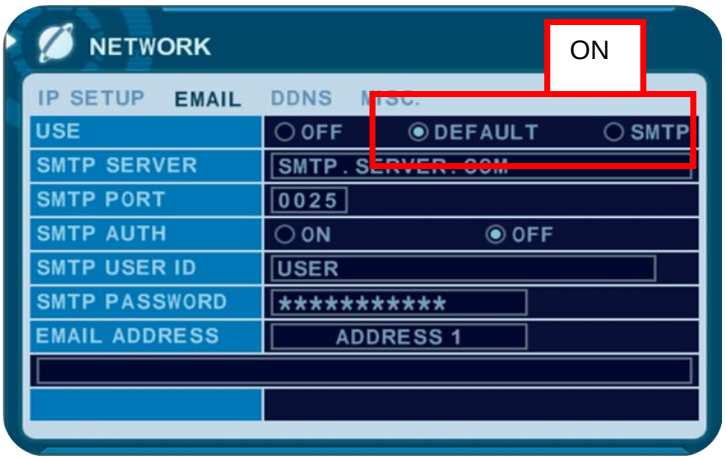
ITEM	ADJUSTMENT
CONFIG	STATIC IP: Edit the IP address, gateway and netmask. DHCP: Dynamic Host Configuration Protocol. if there is a local DHCP server, this option is active automatically. The DHCP is not active if the recorder is not connected to a WAN network.
IP SETUP	Edit “IP address”, “gateway” and “netmask”.
PORT	Select a value between 0000 9999: The DVR’s connection port can be adjusted in case the default port 7000 is blocked. The DVR’s service port may be modified to allow the connection via the SanView software..

How to connect the recorder to the network using DHCP:



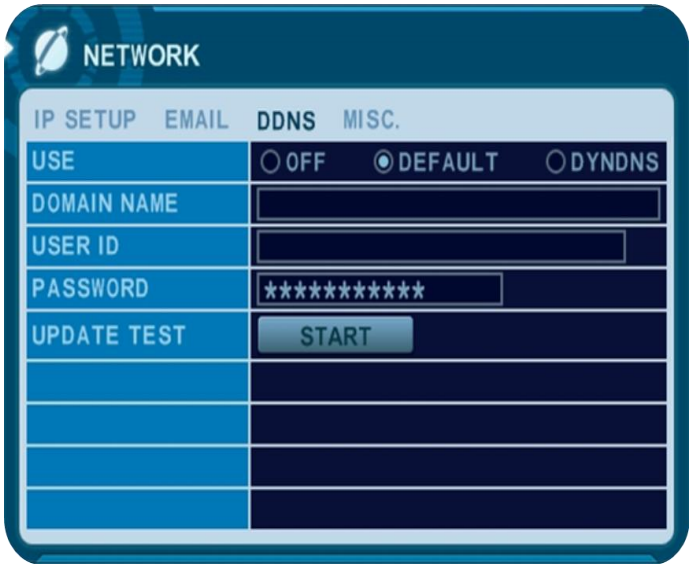
6.8.2 E-mail

The recorder is capable of sending e-mails to up to 5 different recipients if one of the following failures occur: image failure, video loss, power loss (at recovered power) or HDD failure.



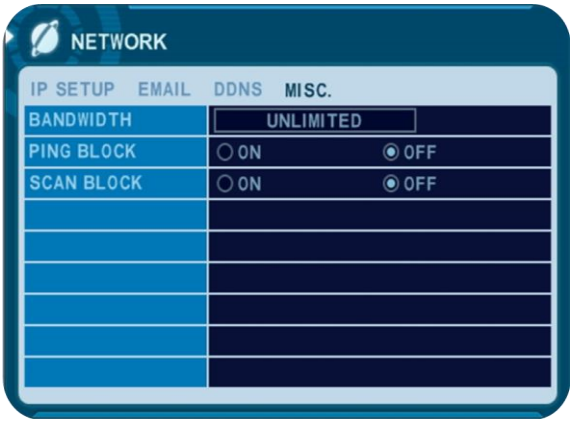
ITEM		ADJUSTMENT
USE	OFF	Set the e-mail notification to “on” or “off”. The default is “off”.
	DEFAULT	Select mail server: The default setting is supported by the manufacturer. You do not need to set up a SMTP server.
	SMTP	Select the mail server. In the following line, define the SMTP server.
SMTP	SERVER	Select the SMTP server and then press the numeric buttons to define an e-mail server.
	PORT	Define the port that the SMTP server will communicate through.
	AUTH	Set the authentication to “on” or “off”. The default is “off”.
	USER ID	Enter the user ID of the mail server if your server needs an authentication (not case-sensitive).
	PASSWORD	Enter the password, if your server needs an authentication (only lower-case letters).
E-MAIL ADDRESS		Enter one of five e-mail addresses to send the notifications to.

6.8.3 DDNS



ITEM	ADJUSTMENT
USE	OFF: No use of DDNS. DEFAULT: Not supported DYNDNS: For use of “Dyndns.com” domain.
DOMAIN NAME	Enter the domain name if you use “Dyndns”.
USER ID	Enter the user ID for DDNS.
PASSWORD	Enter the user password for DDNS
UPDATE TEST	Test your DDNS address.

6.8.4 Miscellaneous

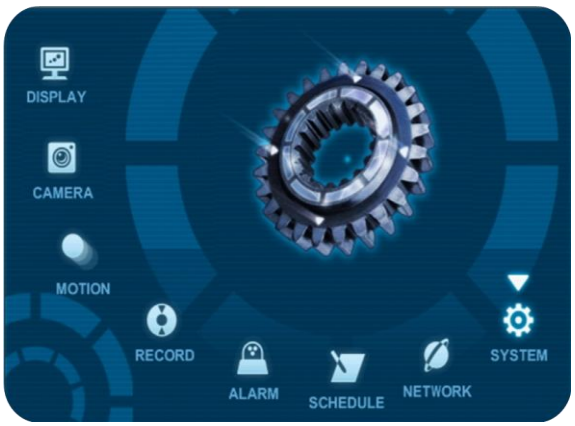


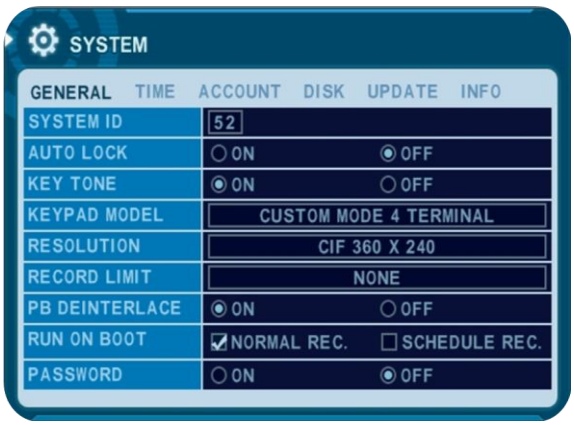
Item	Adjustment
BANDWIDTH	The default setting is „unlimited“. Select from “64 KBPS - 8 MBPS”.
PING BLOCK	No response for ping. Default setting is “off”.
SCAN BLOCK	No response for auto-scan from software. Default setting is “off”.

6.9 System setup

6.9.1 General

- Use the direction buttons [▲▼◀▶] to select „system“. Press [ENTER] to confirm.
- Use the left/right buttons [◀▶] to go to the next tab.
- Use the down button [▼] to select the desired item.
- Use the [- +] buttons to change the values.
- Press [ENTER] to save the changes and to exit the menu.
  Press [CANCEL] to exit the menu without saving the changes.

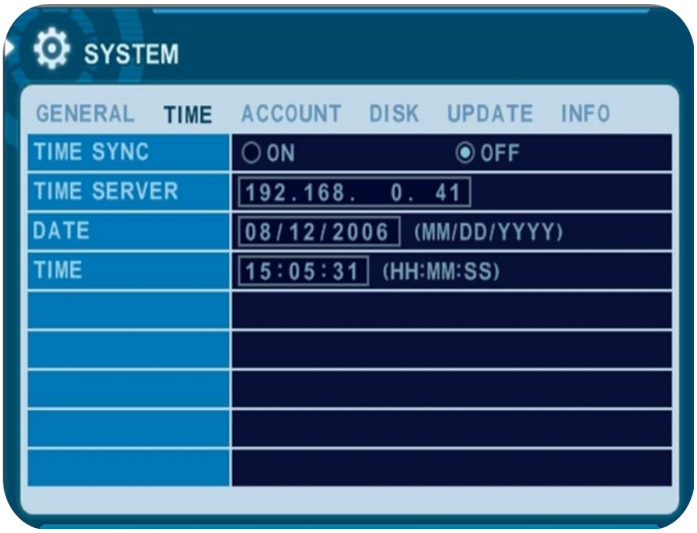



SYSTEM
GENERAL TIME ACCOUNT DISK UPDATE INFO
SYSTEM ID 52
AUTO LOCK ON OFF
KEY TONE ON OFF
KEYPAD MODEL CUSTOM MODE 4 TERMINAL
RESOLUTION CIF 360 X 240
RECORD LIMIT NONE
PB DEINTERLACE ON OFF
RUN ON BOOT NORMAL REC. SCHEDULE REC.
PASSWORD ON OFF

(continue on next page

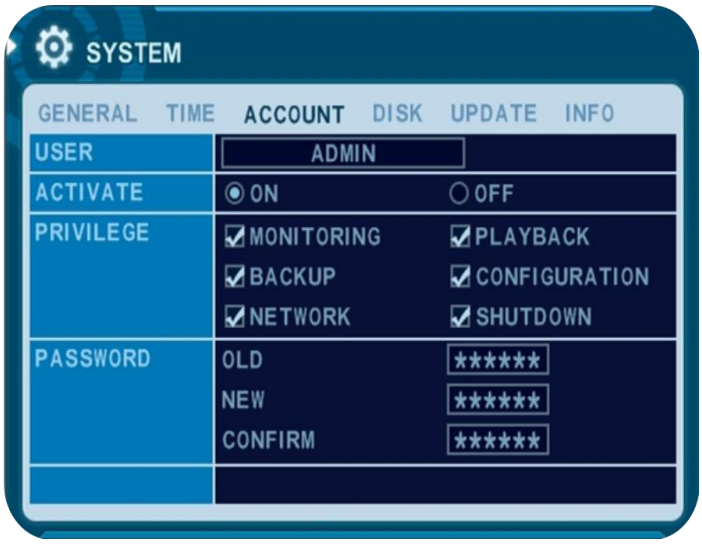
ITEM	ADJUSTMENT
SYSTEM ID	To select the DVR to be controlled with the remote control, press and hold the DVR ID button. While holding the DVR ID button, press the appropriate DVR ID number. For example, enter 05 for DVR ID 05, enter 43 for DVR ID 43, and so on. Set the ID on the remote control to “00” to control DVRs at the same time, irrespective of whatever DVR ID they are.
AUTO KEY LOCK	The DVR locks all the buttons after three minutes of inactivity like a screensaver. The buttons can be unlocked with the user password. Default is “OFF”.
KEY TONE	By default, the DVR emits a beep every time a button is pressed. Set the key tone to “off” to turn the button beep off. Default is “ON”
KEYPAD MODEL	Select the joystick control and the Baud rate.
RECORD SIZE	CIF : The DVR records each camera individually and then multiplexes them. Each channel records at a field resolution of 360*240(360*288). Field :The DVR records each camera individually and then multiplexes them. Each channel records at a field resolution of 720*240(720*288). Frame**:** 720*480(720*576)
PB DEINTERLACE	ON: Reduces image flickering but less picture quality. OFF: Better picture quality for still image but having flickers for moving picture.
RUN ON BOOT	If you tick “Normal Recording”, the unit will save the previous recording setup value after rebooting. For example, if you shutdown the DVR in this “Normal Recording” mode, the unit will still be in recording mode when you turn on the DVR again. And if you choose “Schedule Rec”, the unit will be in schedule recording mode.
PASSWORD ON	if you choose “OFF”, the password window will not be shown except for “power off”, “service menu”, “recording stop”, schedule recording” and “stop”.

6.9.2 Time



ITEM	ADJUSTMENT
TIME SYNC	If several DVRS are installed and connected via network, one of the DVRs or PC may be set as the master clock. This unit will control the date and time for all of the other units. ON: It is set as the slave clock. OFF(Default): it is set as the master clock or the unit which does not use the “Time Sync” function.
TIME SERVER	Enter the IP of the master clock DVR or the PC when the unit is set as [ON] on “Time Sync” menu.
DATE & TIME	Enter the date and the time.

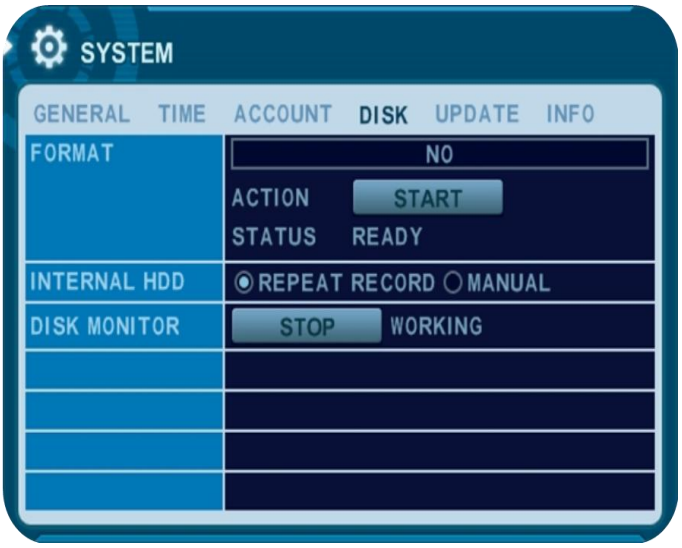
6.9.3 Account



The administrator can define each user's authority. Select users 1-5, then set the activation level to "on" or "off. When enabled, it will be possible to check the user settings on an individual basis: Monitoring, playback, backup, network, configuration (main menu setup), shutdown (power off).

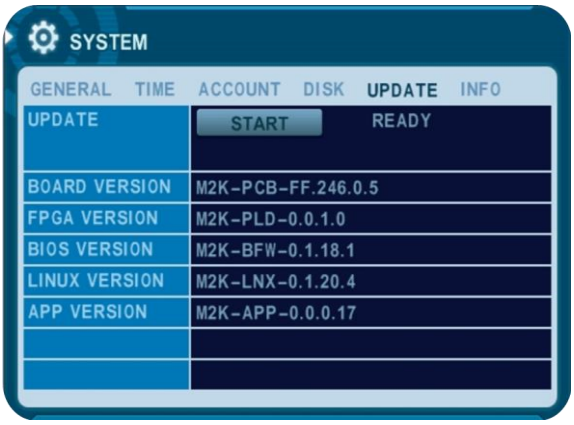
To change the password, enter a new 6-digit password into the "NEW" field and then re-enter the same password in the "COMFIRM" field. The asterisks will advance automatically as the numbers are entered.

6.9.4 Disk



ITEM	ADJUSTMENT
FORMAT	1. Stop the DVR completely before formattin the disk. 2. Use the [-, +] buttons to change the select device: Internal HDD, RACK-CD/RW or DVD RW, USB (front), USB (rear) 3. Use down button [▼] to go to START, then press the [- +] button to start formatting. 4. The formatting will begin, and the progress will be displayed at the bottom of the window. Please note that it takes 10-30 seconds to format a HDD. 5. When the formatting is finished, it will display “SUCCESS” at the bottom of the window.
INTERNAL HDD	Select the record policy of the internal hard disk drive. By default, the hard disk drive will overwrite from the beginning when it becomes full. REPEAT RECORD: It starts to overwrite the oldest data. MANUAL: It stops recording if the HDD is full.
DISK MONITOR	It stops automatically if a HDD failure happens. It starts to “Monitoring” again after a DVR reboot . (Use the [- +] buttons to stop or start.)

6.9.5 Update



1. Download the latest firmware file and copy it to a USB flash memory stick in the root directory.

   Note:
   Please make sure to save all data onto the stick.

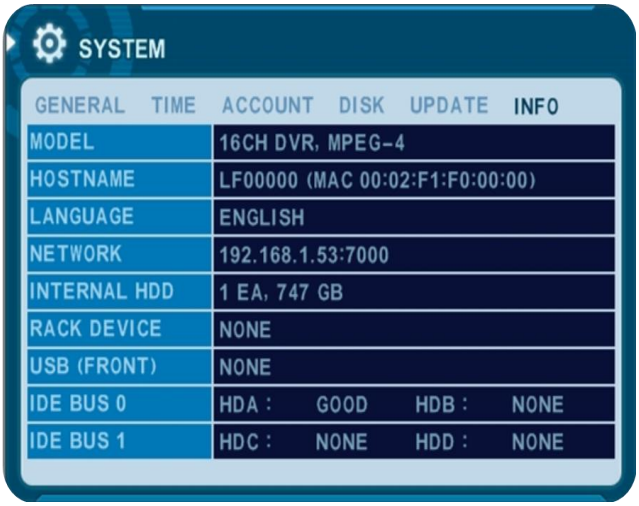
2. Connect the USB stick into the port of the recorder front panel.
3. Go to “update menu” and start the update by pressing the [+] or the [ENTER] button.
4. Wail until the update has been completed and the message “success” appears. Then press the [+] button to reboot the recorder.

Notes:

- As long as the update is in progress, no keys must be pressed and the recorder must not be switched off.
- Please contact your local distributors before initiating an update.

Indicator	CONDITION
BOARD VERSION	Shows the main PCB version of this unit.
FPGA VERSION	Shows the FPGA version of this unit.
BIOS VERSION	Shows the Bios version of this unit.
LINUX VERSION	Shows the Linux version of this unit.
APP VERSION	Shows the application version of this unit.

6.9.6 Info



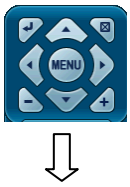
Press the [INFO] info button on the remote control to display the information. This menu only summarises information and not entries can be made here.

Indicator	CONDITION
MODEL	Displays the channel number and data compression.
HOSTNAME.	Displays the hostname and Mac address.
LANGUAGE	Displays the language of this unit.
NETWORK	Shows the current IP and port of this unit.
INTERNAL HDD	Displays the numbers of HDD and total HDD size .
RACK DEVICE	Displays what kind of device are installed : DVD or CD or HDD
USB (FRONT)	Displays what kind of device is connected to the front USB connector.

7. PAN/TILT ZOOM (PTZ) CONTROL

7.1 PTZ menu

To activate the pan/tilt control, select the full screen display of the camera you wish to control.
Then press the [PTZ] button. The following window pops up:



INDICATOR	RESULTING ACTIONS
[ENTER] Button	Press this button to display the “help” menu. Press the[ENTER] utton again or the [CANCEL] button to cancel the “help” menu.
[CANCEL] Button	Press this button to cancel “PAN/TITL” operation.
[MENU] Button	Press the [MENU] button to access the complete functions from the PTZ interface. Press this button again to go to the shortcut menu.
	To tilt up and down. To pan right and left.
	To zoom in and out.

The [MENU] button is the guide anchor position for all other buttons/functions.
If you are in PTZ mode, the buttons are valid for PTZ settings.

Note:
Please check the following before making any PTZ settings:

- RS-422/485 connection and camera jumper settings
- In the display menu, enter the ID and protocols of the PTZ camera.

7.2 Preset and tour

Button	Function
	Set the preset position. Press the [SPOT OUT] button on the remote control. Move the PTZ camera into the desired position. Press the [Preset] button. “Custom 1” will illuminate. Set the number for the preset position. Press the [Enter] button to save the presets and to exit the menu.
	Go to the preset position. Press the [INFO] button on remote the control. Press the [Go] button. Enter the desired preset number and the press the [Enter] button.
	Start auto tour. Press the [BACKUP] button on the remote control. Press the [Auto Tour] button. Press the [+] button and the enter the range of presets. Press [Enter] to confirm.

7.3 Custom functions

Button	Function
	First PTZ custom function: [DISPLAY] button on the remote control
	Second PTZ custom function: [ZOOM] button on the remote control
	Third PTZ custom function: [PTZ] button on the remote control

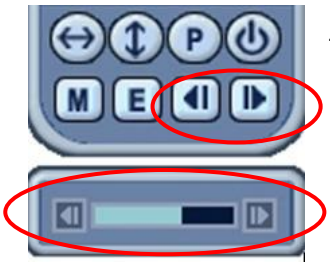
Please also read the user manual of your PTZ camera manufacturer in order to set the correct jumper adjustments, aligned with the protocols of the recorder.

7.4 PTZ camera models

No.	Camera name	3X	Speed	Preset	Go to	Tour	A. Pan	A.Tilt	Pat	Me	Esc/ Enter
1	NUVICO, NV 9600 BPS	o	o	o	o	o			o	o	o
2	MERIT LILIN, PIH-7000/7600	o	o	o	o	o	o			o	o
3	VCL, Orbiter Microsphere		o	o	o	o					
4	SAMSUNG, SCC-641		o	o	o	o	o			o	o
5	NEC, NC-21D		o	o	o	o					
6	SUNKWANG, SK2107		o	o	o	o	o				
7	RESERVED		o	o	o	o	o				
8	D-MAX, PTZ PROTOCOL		o	o	o	o	o	o			
9	LG, LPT-A100L P/T/Z						o				
10	HONEYWELL, GCC-655N										
11	WONWOO, PT-101						o				
12-14	PELCO, D 2400~9600	o	o	o	o	o	o		o	o	
15	C&B TECH, AN200			o	o	o					
16	CANON, VC-C4			o	o	o					
17-19	PELCO, P 2400~9600	o	o	o	o	o	o		o	o	
20-22	PELCO, EP 2400~9600		o	o	o	o					
23	PANASONIC, WV-CS/W85x,86x		o	o	o	o				o	o
24	HONEYWELL, HSDN-251N/P		o	o	o	o					
25	GE/KALATEL, CyberDome		o	o	o	o	o				
26	DY ELEC, SmartDome		o	o	o	o	o				
27	BOSCH, TC8560/TC700		o	o	o	o					
28	SYSMANIA, ORX1000										
29	AD, DELTADOME		o	o	o	o			o		
30	HUNT, HTZ-2300		o	o	o	o	o	o			
31	HAZEM, RESERVED			o	o	o	o				
32	RVT, EZ Protocol	o	o	o	o	o			o	o	o
33	LG, , MULTIX		o	o	o	o			o		
34	ELMO, PTC-200C/400C		o	o	o	o					
35	NICECAM, MP-1xxx		o	o	o	o					
36	C&B TECH, CNB-PTZ102			o	o	o	o	o			

(continue on next page)

Note:



The pan/tilt speed can be set from 0-8:
1 = slow, 8 = fast

If the speed is set to 0 and you press and hold the button, the speed increases until you stop pressing the button.

8.PLAYBACK AND SEARCH

8.1 Time search

- Press the [Time Search] button to access the time search table. A calendar with search function for day and time will be displayed.

- Use the left/right button [◀▶] to enter the month/year display.

Note:
If there are not stored recordings in the previous or the next month, they will not be displayed either.
The recording date is colour-coded:
Red = alarm; green = motion; yellow = normal

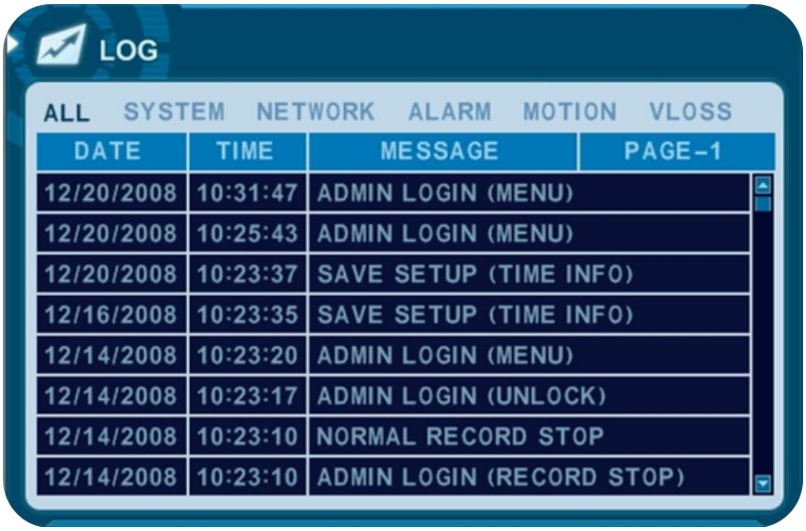
- Use the up/down buttons [▲▼] to select a day from the calendar. The selected video recording is graphically shows.
- Select the time (hour and minute) for the selected recording. Confirm it by pressing [ENTER].

- Press [ENTER] again to start the playback.

8.2 Log list search, alarm, motion detection

The logs can be used to search and review a point in time of the recorded data. Alarm, motion, video loss and system related logs can be searched and played back directly from the time of the incident.

1 . To start the event search, press the [Log] button on the remote control. The log list menu pops up, as shown below.


LOG
ALL SYSTEM NETWORK ALARM MOTION VLOSS
DATE TIME MESSAGE PAGE-1
12/20/2008 10:31:47 ADMIN LOGIN (MENU)
12/20/2008 10:25:43 ADMIN LOGIN (MENU)
12/20/2008 10:23:37 SAVE SETUP (TIME INFO)
12/16/2008 10:23:35 SAVE SETUP (TIME INFO)
12/14/2008 10:23:20 ADMIN LOGIN (MENU)
12/14/2008 10:23:17 ADMIN LOGIN (UNLOCK)
12/14/2008 10:23:10 NORMAL RECORD STOP
12/14/2008 10:23:10 ADMIN LOGIN (RECORD STOP)

MENU TAP	CONDITION
ALL	It has a list of all events since the initial power on of the DVR.
SYSTEM	It shows all events except for alarm, motion and video loss.
ALARM	It shows all alarm lists.
MOTION	It shows all motion lists.
VIDEO LOSS	It shows all video loss lists.

2. Use the up/down buttons [▼▲] to go to “Time”.
Use the left/right buttons [◀▶] to move to the next page.

3. Press the [ENTER] button to start the playback.

Note:
The log lists are saved on the HDD.
You may also save the log lists on a USB stick. Stick it into the USB port and press the [MENU] button

9.BACKUP

9.1 Internal CD/DVD-RW drive

This recorder has an integrated CD/DVD-RW drive which can be used for backup purposes. A backup CD can also be read using this drive, e.g. to look at already stored backup data.

1. Insert a blank media into the built-in CD/DVD drive.

2. Press the [BACKUP] button on the remote control and the backup menu will appear.

3. Use the [-, +] button to select the device “CD/DVD-RW”.

4. Please select the data you wish to backup:
   - Normal: normal recordings
   - Alarm: Alarm recordings
   - Motion: Motion recordings

5. Select the time range starting time and ending time (24 hour clock).
   Then press START.

6. Press the [ENTER] button to start the backup process.

The CD indicator will be changed to blue if the backup is in session.

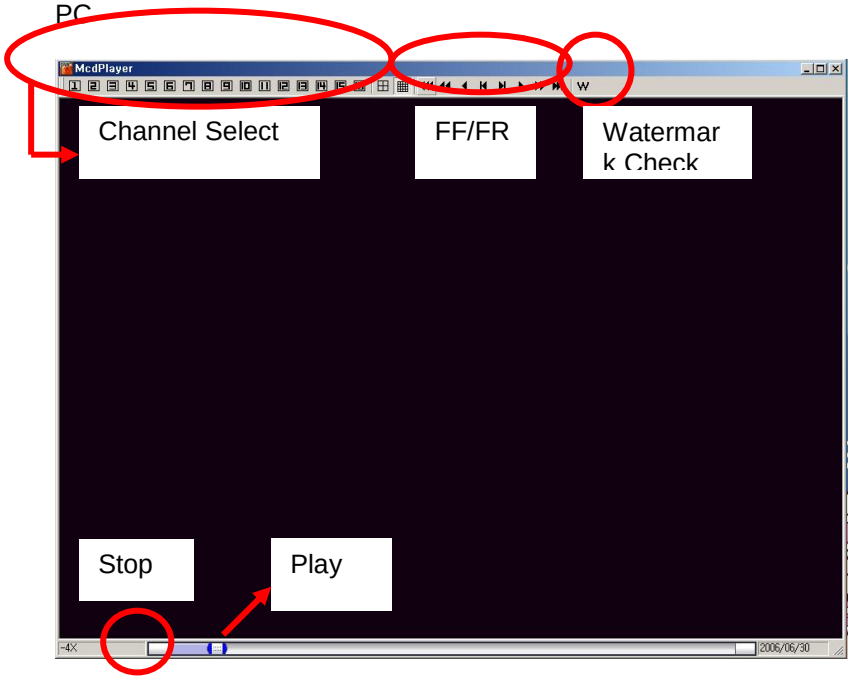
The progress of the backup will be displayed at the bottom of the window in percentages of the entire backup process. Please note that the internal CD-RW icon’s color will change to blue to signify that backup is in progress. If you press [CANCEL], the window is closed. If you press [BACKUP] again, the backup stauts is indicated again.
While the backup is running, playback should not be started.

Once the backup process is finished, the CD icon in the status bar lights up in grey and the CD/DVD is ejected.

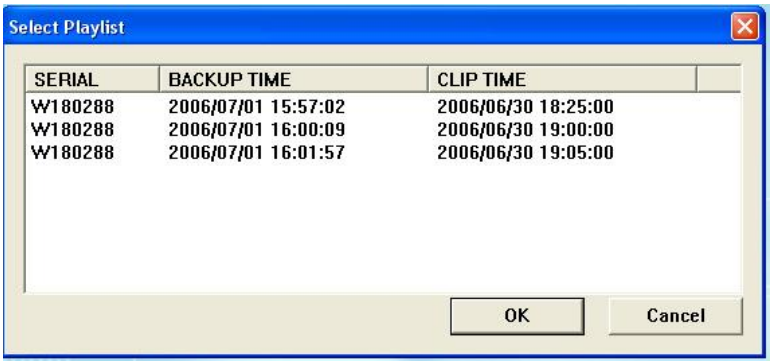
In case there is not sufficient storage left on the CD7DVD, the recorder automatically ejects the CD/DVD once it is full. If you insert a new CD/DVD, the process is continued.

Note:
During backup, there should be no recording running.

The playback software will simply “auto-run” and does not require the installation of software on you PC



If you choose to backup several items, a “playlist” will pop up instead of “auto run”.



9.2 USB memory stick

The backup process via an external USB stick is identical to the above described CD/-RW drive process.

9.3 Backup range setup

It is possible to run a backup over a specific time range.

- Go to the “time search chart” menu.
- Press the [-] button to set the backup start time. Press the [+] button to set the end. The selected time will be displayed in grey.

- The selected backup time from 15:05 – 15:15 will be displayed for the backup range.

10. TECHNICAL SPECIFICATIONS

Specifications	SanStore-4EM (4-channels)	SanStore-8E (8-channels)
Video input/ loop out	4/0	8/0
Video output	Monitor, VGA, SPOT-OUT	
Compression	MPEG 4	
Live display resolution	PAL 720*576	
Alarm in / out (relay)	4/1	8/2
Operating system	EMBEDDED LINUX	
System control	Keyboard, IR remote control, SanView software	
Live display speed	4/8 channels real time	
Max. recording rate (PAL)	25 fps 720x576 ,50 fps 720x288, 100 fps 360x288	
Audio record	1 IN, 1 Out	4 IN, 1 out
Features		
Display	Brightness, contrast, color adjustments per channel	
Camera title	12 characters per channel	
Recording mode	Manual, schedule, alarm, motion	
Recording method	5 levels of compression rate / record frame rate adjustment	
Recording adjustments	Pre-Alarm: 3 sec / Post-Alarm: 10 sec. -300 sec.	
Motion detection per channel	4*4 Grids (SET) / 28 x 24 (SanView software) / 20 sensitivity levels	
Search mode	Date & time, camera , alarm / motion	
Playback modes	Forward & reverse: Pause, frame by frame, normal speed, 2x, 4x, 8x, 16x	
Multi-tasking	Simultaneous live display/ playback, record or backup, remote transmission	
Watchdog	Power failure recovery: Auto reboot with maintaining previous record settings	
Backup	Internal CD/DVD-RW , USB flash memory stick	
Interface	RS422, Ethernet (10/100 Base-T), USB 1.1	
HDD	1 INTERNAL HDDS + CD RW , DVD RW	
Remote software	SanView	
General		
Power	DC 12V	
Operation temperature	0-40° C	
Dimension	350x82x205 mm	
Weight	Approx. 3.5 kg	

Subject to technical changes without prior notice. Errors excepted.

NOTES

Your local distributor:

SANTEC
VIDEO TECHNOLOGIES